

Transportation Sector Update

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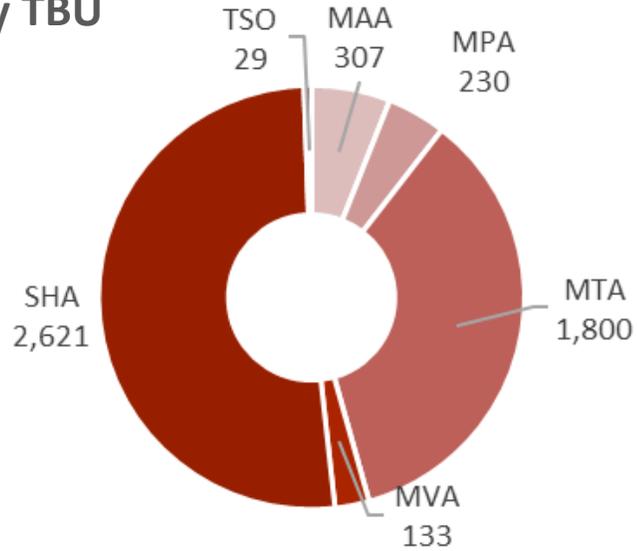
March 16, 2021 Mitigation Working Group Meeting

Agenda

- MDOT Fleet Innovation Plan
- MDOT MTA – MTA Zero Emission Fleet Transition Study (separate presentation)
- MDOT GGRA Plan
- Interpreting Results
- Uncertainties and Variables
- Moving Forward and Recommendations

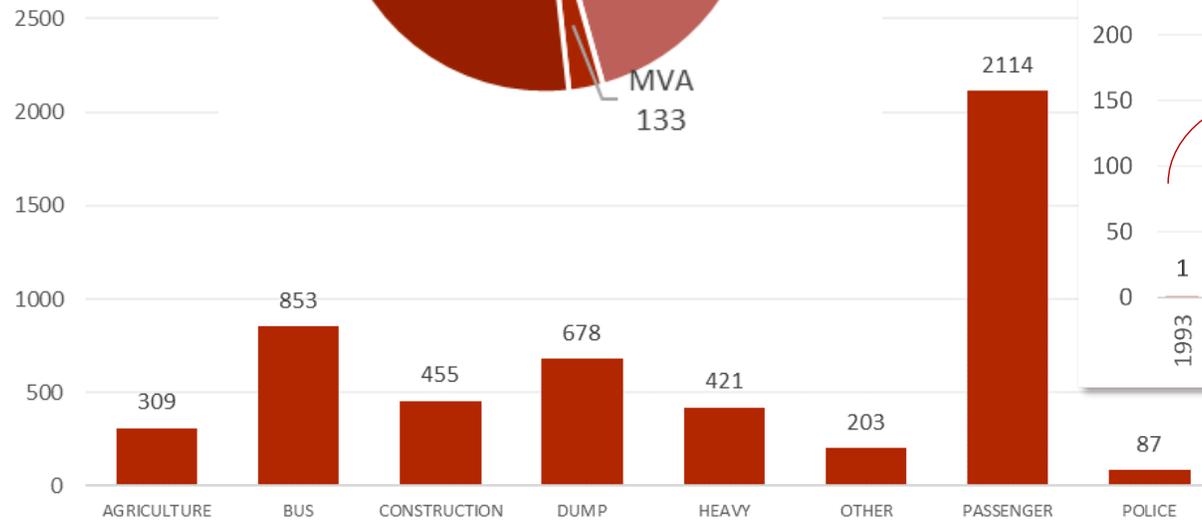
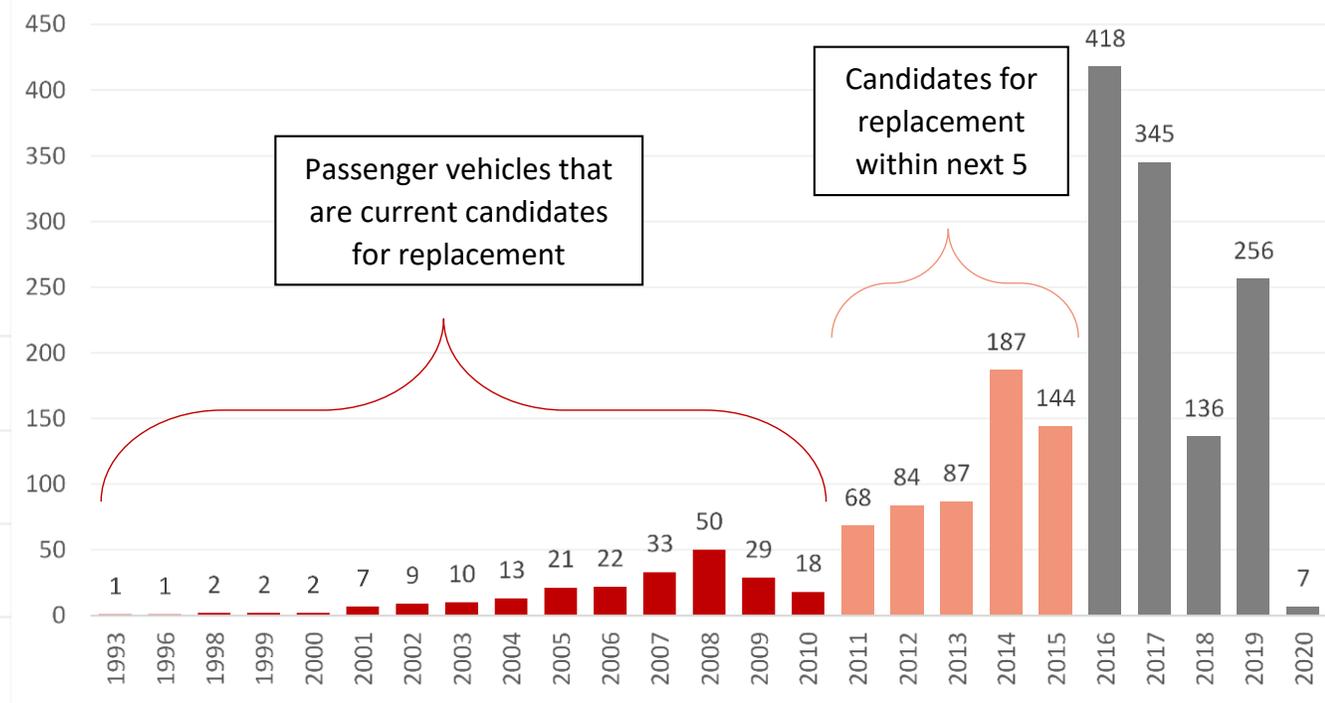
MDOT Fleet Innovation

Vehicles by TBU



Vehicles by Age

Passenger Vehicle Candidates for Replacement Based on Age



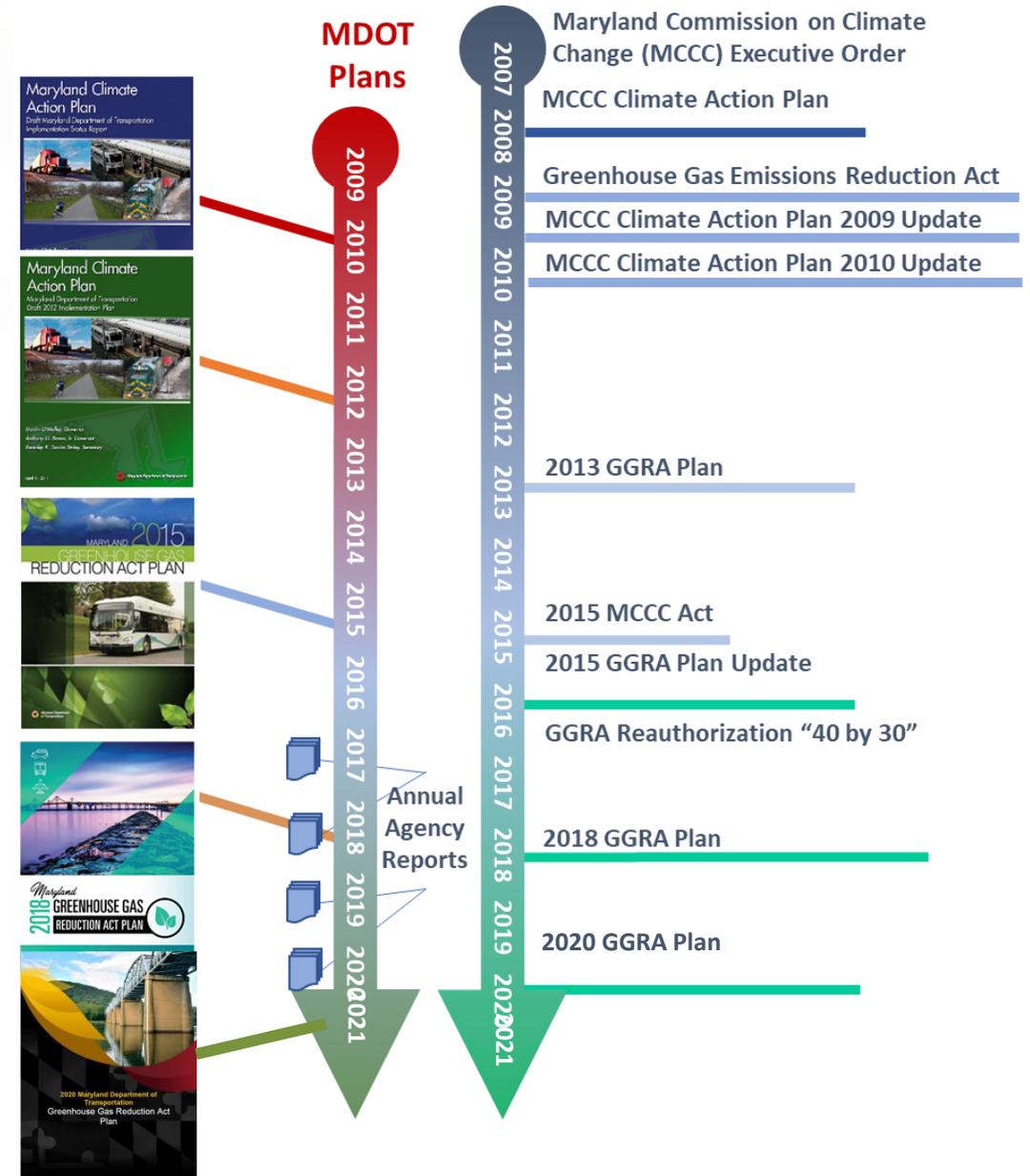
Vehicles by Use

MDOT GGRA Plan



MDOT GGRA Plan

- Assesses transportation sector contributions
 - Accomplishments since 2009
- Discusses broad trends
 - Vehicle miles traveled (VMT)
 - Vehicle technology
 - Fuel use
- Identifies strategic actions, including costs and benefits, for implementation through 2030



The MDOT Scenario Process

Careful and Evidence-Driven Approach to 2030

Reference Case

- Current VMT Growth Trend to 2030
- Existing Federal GHG Emission Standards (Light Duty Vehicles and Medium/Heavy-Duty Trucks)
- Electric Vehicle Market Share Consistent with TCI Reference Case Projections

Policy Scenario 1

- Funded and Committed Transportation Projects, Programs and Initiatives through 2030
- Regional Clean Low-Carbon Fuel Standard and Land-Use Efficiency Assumptions

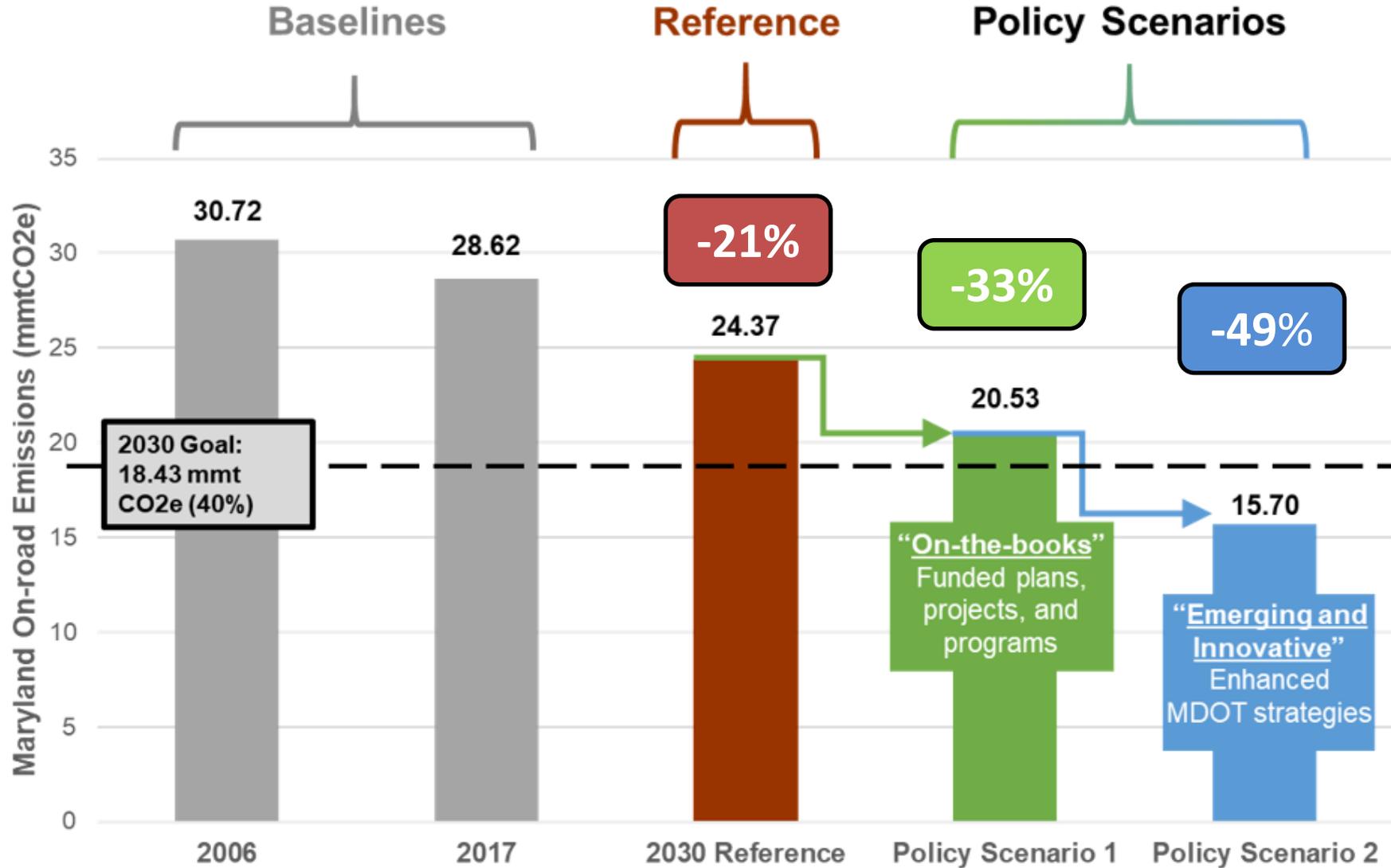
**Fully Funded for
Implementation by 2030**

Policy Scenario 2

- Mix of Expanded and Accelerated Traditional and Emerging along with Innovative and Market-based Transportation Strategies
- Organized as Bundles broadly covering Technology, Freight, Transit and TDM Categories

**Unfunded Strategies for
Implementation by 2030**

Results Summary



Interpreting Results



Interpreting Results and Key Takeaways

Policy Scenario 1

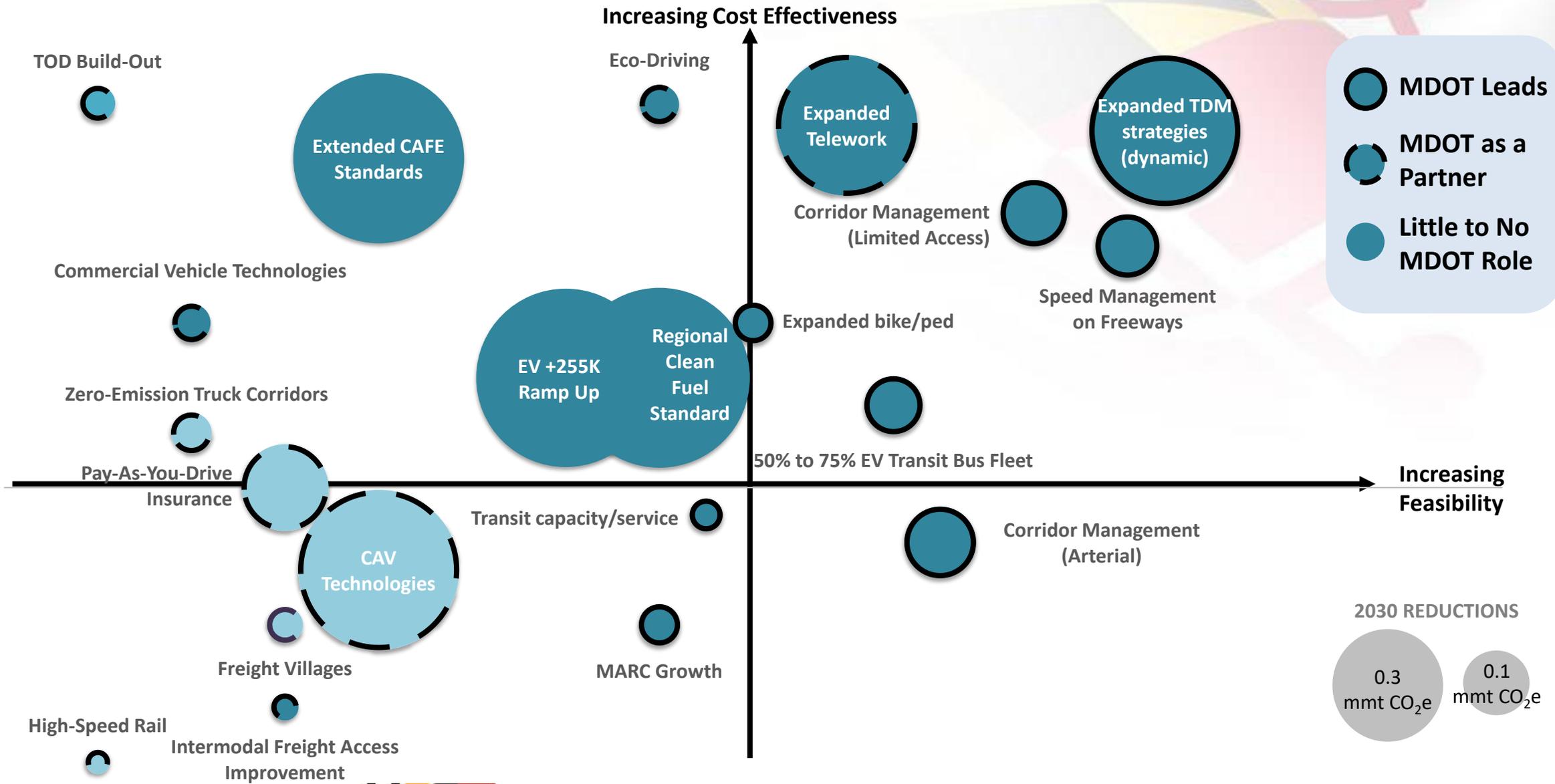
- Total cost is **\$14.09 billion** for an estimated **2.19 mmt CO₂e reduction**
- Reduction estimates assume sustained funding based on 2020-25 CTP levels and federal funding
- VMT growth and economic activity impact emissions pathways

Policy Scenario 2

- Total cost is **\$11.59 billion** for an estimated **4.54 mmt CO₂e reduction**
- All strategies are **unfunded**
- Technological and market-based dependencies
- MDOT control limited to enabling policy and facilitation

** not including potential investments in SCMAGLEV or Loop*

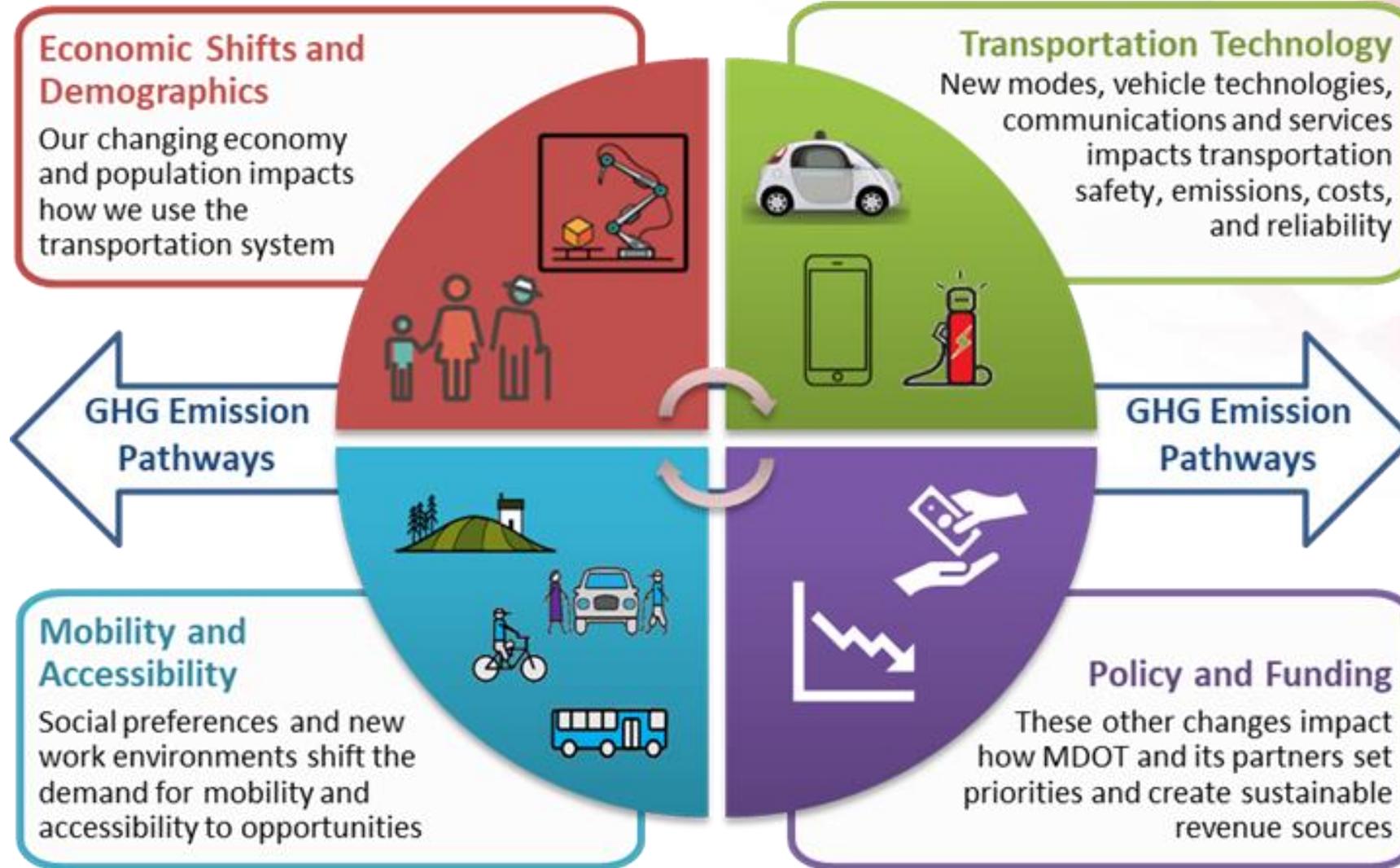
Policy Scenario 2 Strategies



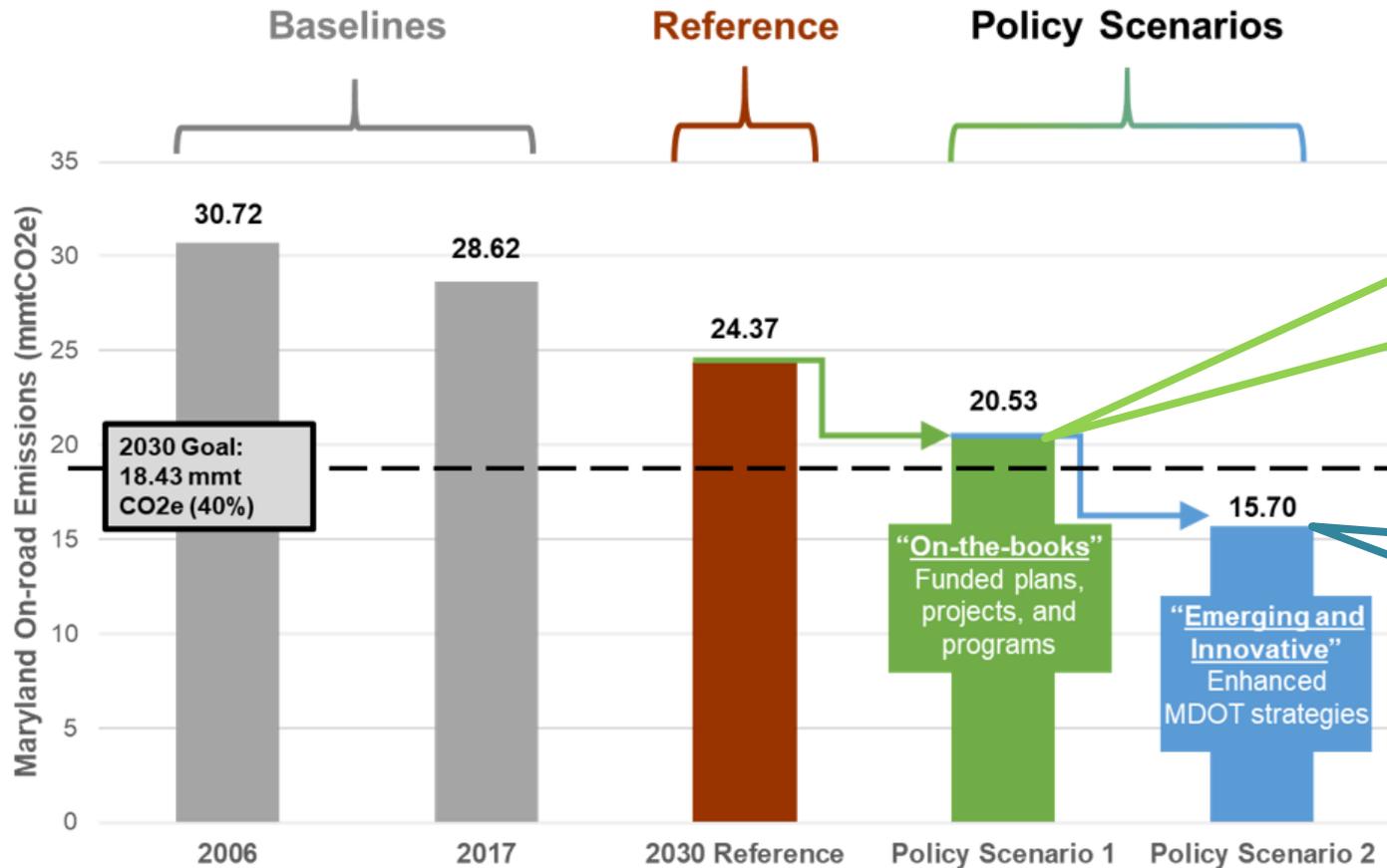
Uncertainties and Variables



Drivers and Trends



Uncertainty Through 2030



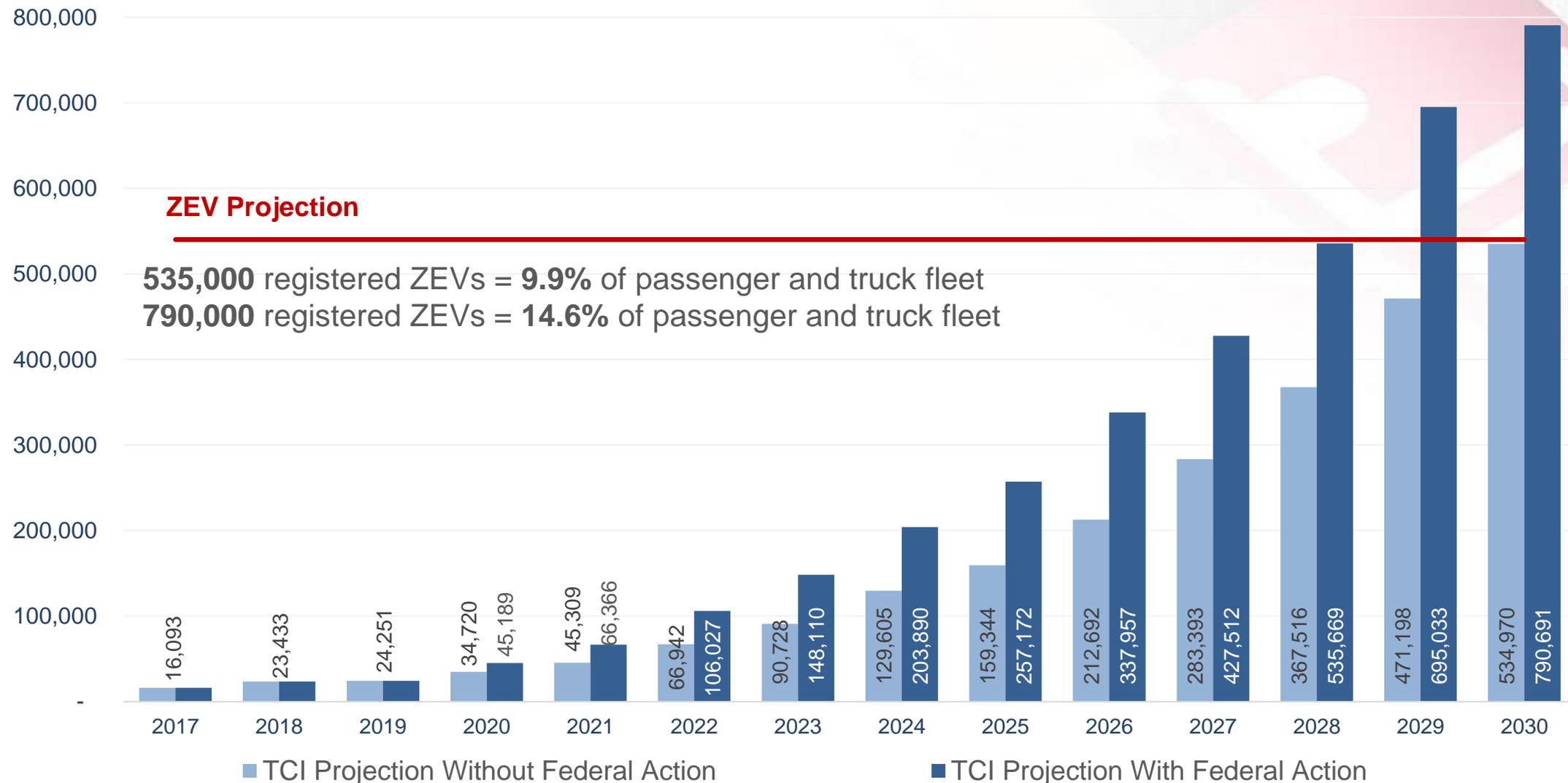
- Transportation funding constraints
- High O&M costs
- Low fuel/travel costs and strong economy (high VMT)

- Technology barriers
- Less private investment
- Less sustained federal support/policy

Little to no MDOT control - primarily tied to the strength of the economy, private sector, and funding policy

Transportation Technology

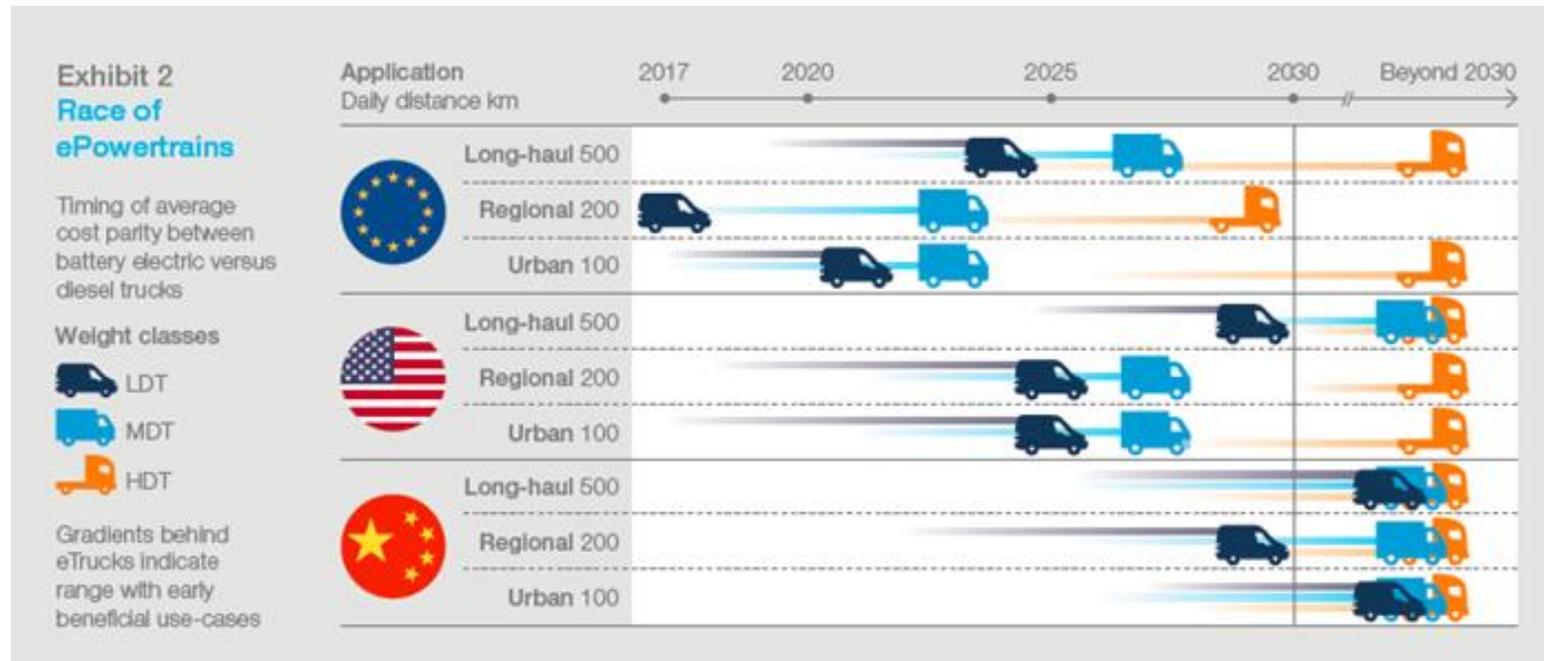
Electric Vehicle Projections



Transportation Technology

Electric Vehicle Market Trends

- “US electric market is expected to reach 6.9-million-unit sales by 2025, up from 1.4-million-unit in 2020, due to government incentives driving EV ownership.” [Frost & Sullivan, Nov. 2020](#)
- General Motors Sets a Goal to Stop Making Gas Vehicles by 2030.
- Ford invested \$500M in Rivian and committed \$29B to EV/AV through 2025.
- Volvo Truck launches sales of its new VNR Electric Class 8 regional hauler (early 2021 production).
- Pledge to build 550,000 EV Charging Stations (Electric Highway Coalition-6 Major Utilities)



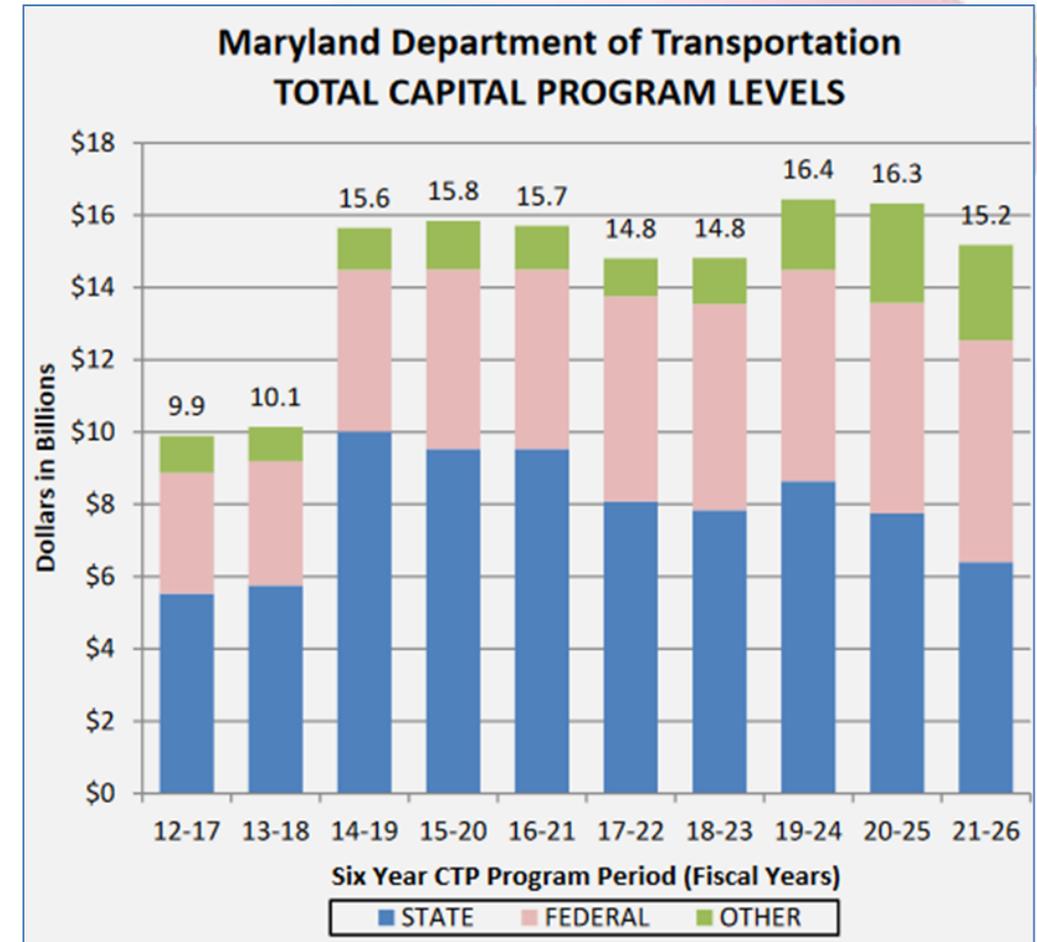
Source: McKinsey Energy Insights,
McKinsey Center for Future Mobility

Federal Transportation Policy Direction

- Future of Transportation Funding
 - “Some Sort of Road Usage Levy Necessary.” – USDOT Secretary Pete Buttigieg
- Energy, Equity
 - Key priorities across Modes (FHWA, FTA, FRA)
- Presidential Executive Order
 - “Ensuring the Future Is Made in All of America by All of America’s Workers”
 - US government owns 645,000 vehicles – 3,215 of these are EVs (July 2020)
 - US government spent \$4.4 billion on federal vehicle costs in 2019
- Moving Forward with Reauthorization
 - FAST Act expires Sept 30, 2021

Funding Uncertainties

- CTP Outlook: assumes economy will return to a moderate growth scenario during the next six years
- Federal Highway Trust Fund: programs exceed annual revenues and rely on fund transfers
- Incremental funding sources not well-suited to upfront capital investment needs for EV transition
- Price parity of technologies is a key uncertainty for adoption of vehicle technologies (especially for HDVs)



Moving Forward



2021 MWG Work Plan

Underway:

- MDOT compiling research from ZEEVIC and others on barriers to ZEV adoption and mechanisms to reduce those barriers

Underway:

- MDOT compiling research on the impact of ridesharing and connected autonomous vehicles on GHG emissions.

Recommendation:

- With federal partners, address federal prohibition on commercial activity (this includes sale of electricity) at highway rest areas, to facilitate proliferation of EV charging

QUESTIONS?

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